

# Grid girdle

## Intergraph system will help Texas power company control its costs



Dave Dieter

**Eric Charette, senior smart grid consultant, operates the Intergraph Smart Grid Command & Control Solution. In the background are Brimmer Sherman, vice president, center, and David Joffrion, manager corporate communications.**

By Anna Thibodeaux

When Oncor set out to implement a consolidated interface to improve reliability, communications and shorten response time on outages, the Texas utility chose Intergraph to provide the software to help mastermind a milestone.

"Combining an outage management system with a distribution management system is a first in the industry," says Phillip McCrory, director of Oncor Electric Delivery's transmission and delivery Services in Dallas. "With this new system, Oncor will be able to operate from an up-to-date map that reflects the current state of the grid and will also have the ability to control intelligent devices that are currently in the field."

Like many utilities looking to the future, Oncor is taking definitive steps toward harnessing the smart grid, or an artificially intelligent system capable of monitoring electricity flow and improving efficiencies.

Oncor's system will rely on smart meters for information, which the company will be phasing in until 2012. McCrory says the meters will help prevent and solve power outages, as well as communicate with "smart" or computerized appliances in the household capable of being remotely shut off during peak energy use to avoid blackouts. Also, consumers will get more information about their power use, which helps them make better decisions on controlling energy costs.

Intergraph's Smart Grid Operations Command & Control Center software will provide the link to make this possible. By utilizing sophisticated diagnostics, the system visualizes the location and cause of an outage.

"Our system is tiered up to handle large utility customers," says Jay Stinson, Intergraph's vice president of utilities and communications. "Oncor is a very progressive company. They have an open market for electricity, so that drove a lot of this new technology." In Texas, consumers are allowed to buy electricity from a variety of retail electric providers.

Stinson says the move is putting Intergraph on the front end of this business, too, and he foresees growing demand for smart grid technologies.

Faced with what he calls a "techno-push" by the Public Utility Commission of Texas to control power costs, Oncor, the nation's sixth largest power distributor, looked to greater automation. The push is equally strong on the federal

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level with alternative or clean energy, a move aimed at helping both utility and consumer make better decisions about electric generation and use.

Intergraph has partnered with Siemens to help provide the technology.

Oncor will integrate six different systems into a single, user-friendly control panel automated by the command software. Operators will dispatch and clear work tickets electronically, and communications between the field and control center will improve. As more than three million smart meters come online along 117,000 miles of power lines and to nearly seven million customers, the company will gain near real-time energy usage data.

"Oncor is among the most efficient and cost-effective electric delivery utilities in the nation," McCrory says. "However, technology is the key to reaching even higher levels of efficiency in the future."

Past efforts in Oncor's embrace of innovative technology have proven successful. McCrory points to Oncor building the world's largest and fastest-acting static VAR compensators (an electrical device providing fast-acting reactive power on high-voltage electricity transmission networks) in the world to help boost voltage without emissions during periods of high demand.

## 'PERFECT FIT'

When Intergraph came on the Oncor scene three years ago, the Huntsville engineering and geospatial technology firm was already helping others centralize information with command centers such as 911 call centers or for high security.

"It's a perfect fit for us," Stinson says. "We cut our teeth in this area with Progress Energy in the late 1990s, and now we have about 30 outage management-smart grid customers."

Intergraph, which had provided security for President Obama's inauguration and the G8 conference in Italy, made a seamless segue into the power grid, which proved an easy derivative of its public safety and security applications.

Of Intergraph's \$800 million a year revenue, its utility business has already reached \$90 million a year, with 15 percent projected annual growth. Intergraph is mainly deploying the technology in the U.S., Canada, South America and Asia. It recently won contracts with Hong Kong Electric Co., Canada's Enersource utility and KCP&L in Kansas City, Mo. Stinson

says interest is also growing in Europe, where it is providing work asset and management systems to utilities that predominantly have underground lines.

Intergraph software helps pinpoint an outage source rather than dispatching crews to "walk the line" to physically search for the problem.

Mobile technology is another advantage. "The people in the field don't always have the information they need to do their jobs, so we provide the capabilities to get this information," Stinson says. "Intergraph believes it's in the forefront of that market with a considerable amount of focus on mobile devices like PDAs (personal digital assistants)."

Technicians can see where other crews are in the field and text each other to call for assistance, which Stinson calls "situational awareness." Crews aided by more logistical information can provide better assistance in more demanding situations, as well as get the job done sooner.

"An outage also represents lost revenue to a utility, and efficiency means doing more for less cost. You're doing a lot more work with a lot less people," he says. "This interface also factors in weather so the technician can see outages as they occur and actually be proactive in resolving outages faster. Ultimately, it's all about money, and these technologies really do pay for themselves."

Intergraph's software also helps schedule work, including power connects and disconnects, to improve workflow. By automating work assignments, workers can be utilized optimally based on location and skills.

"In a day, we can optimize over 22,000 jobs and then track them," he says. "We know exactly who did what and when they did it, which further optimizes the assignments."

In the past, utilities rarely understood their power grids and often overbuilt the grid. In today's world of tightening profit margins and increasing power demand, cost-effectiveness often demands automation.

"The grid is being taxed more than it ever has," Stinson says. "Although demand is down now, it's still pressured."

Utilities are also looking for ways to control peak demand in certain segments of the day as a cost-control option. He says utilities deal with "time slice pricing" for electricity, which can kick up their wholesale electricity costs.

"When use exceeds base load, utilities have higher-costing power they can pro-

duce or buy, which is more costly," Stinson says. "Controlling peak load saves a utility considerable money."

When monitoring peak use and the network, the system helps make the decisions to balance the load.

"Overload can happen to any system," Stinson says. "On a 100-degree day, people go home and turn on the AC, but when hundreds of thousands do this, there can be a blackout. Rolling blackouts can be implemented to avoid this overload. It's called demand-side management. Some systems peak in the winter, which is lesser known, and if electric demand is higher this can pose problems, too."

## EVOLUTION

Stinson foresees an even greater evolution for the technology.

"We've hit a tipping point with the smart grid," he says, pointing to utilities' intensifying demand for smart meters and strategies on using them. On the consumer side, he anticipates greater solar panel and electric car use, so much of the future's power will be produced in smaller amounts on the grid, which will require a smarter system to handle it.

"Solar technology will drive a lot of this, and the grid will become more dynamic, requiring more central control with all this automation, smart devices and solar or wind power," Stinson says. "All this will need to be managed centrally and Intergraph is trying to play this role with the command and control center."

Intergraph has responded to the future by tripling its smart grid research and development. The company is investing heavily in its relationship with Siemens, jointly doing R&D since they partnered three years ago. Stinson foresees continuing intense improvement in visualization and he's excited about what he foresees coming in the next two to three years.

"I think what you're seeing with video with unmanned drones, for example with (Hurricane) Katrina, we can do with unmanned flights to collect video to assess and restore (power) faster," he says. "These visualization tools will advance with the advent of 3-D and additional information such as storm data being integrated into the system to anticipate better what will happen with the grid, and Intergraph is at the forefront here with its military, security and public safety applications commercialized over time." ■